

FIRE WEATHER ANNUAL SUMMARY - 2002
for
EASTERN WASHINGTON and
NORTHERN IDAHO



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REVIEW OF THE 2002 SEASONS WEATHER

Winter 2001-2002

After a very dry winter of 2000-2001, all eyes wanted to see if a second dry year was in store. October and November certainly appeared promising in this regard. This pattern continued into December. Storms moved through the area on a regular basis for the first half of the month, with no extreme warm or cold spells. But then the weather pattern changed markedly. A large ridge of high pressure built over the western U.S. around the middle of December and shut off most of the precipitation through the rest of the month. The large high pressure ridge continued into the first few days of January. This ridge broke down around the 6th, which opened up our area to the warm southwesterly flow from the Pacific. The cold dry weather of the previous few weeks was replaced by warm, windy, and rainy weather. After this mild and wet period, our flow switched to a more northwesterly pattern. This is typically not a good precipitation pattern for the low lands, but the Cascades and Panhandle mountains do quite well with snowfall. This can also be a windy pattern, which keeps the temperatures up. So as a result, January was warmer and drier than normal. Near normal temperatures prevailed through much of February, but thoughts of spring were put on hold as a cold Canadian air mass took up residence over the Inland Northwest at the end of the month. Temperatures stayed below freezing in Spokane from the 24th through the 27th, making it the coldest stretch of the winter. Temperatures around the region were 10-20 degrees below normal for this last week of February. Even so, temperatures for the month were above normal in Wenatchee and Lewiston. Precipitation was near or below normal. In fact, Wenatchee had below normal precipitation for 21 of the previous 24 months.

Spring 2002

The March-May period was the 5th coldest on record for Wenatchee (with records back to 1959), 3rd coldest for Spokane (back to 1881), and 7th coldest for Lewiston (back to 1881). The cold winter weather lingered well into March as four Canadian fronts made their way into the area. In some winters we can go the entire season without any Canadian fronts, and fronts from the north are rare in the spring. As a result, temperatures for the month were well below normal. One March storm on the 6th deposited 7 inches on the Palouse and in St. Maries, and caused drifting snow in the Spokane metro area. Another storm on the 16th dumped 4-8 inches of snow in Ferry and eastern Okanogan Counties. April continued the cool trend. Any hopes of a warm May were quickly put to rest as another cold air mass from the Gulf of Alaska moved into the area on the 5th. A very unusual snow event ensued. Only ½ an inch of snowfall was measured at Spokane airport, but 5 miles away the National Weather Service office received 5 inches, and 10 miles to the west in the town of Reardan, 15-19 inches of snow was reported. Numerous records were broken throughout the Inland Northwest for cold high and low temperatures. By the end of May, the weather was more typical for the time of year. It was not an active month for thunderstorms, but there was one severe storm that dropped 1 inch hail at Winchester, Idaho on the 26th. Perhaps one way of measuring how cold the Spring was is to look at when the first day of 80° was reached. While Lewiston hit 81° on May 19th, Wenatchee didn't reach 80 until June 2, which is the latest ever recorded. The previous record was June 1st in 1974.

Summer 2002

Will the Summer of 2002 be remembered for the hot July or the cool August? When averaged together, the 3 months of summer were very close to an average in our area. The beginning of June continued the cool spell of spring. Temperatures on the 7th and 8th were more than 10

degrees below normal. Daily record lows were set at many locations. Winchester, ID even picked up 4.3 inches of snow. But June also had it's warm spells in the middle and the end of the month. In the end, June actually wound up a bit warmer than normal. After a rather cool 4th of July (Spokane only had a high of 68), the weather quickly warmed up. A very large ridge of high pressure moved up from the four-corners region. For our area, it meant several daily high temperature records, but no monthly or all-time records. Wenatchee and Lewiston reached triple-digit temperatures 4 days in a row (July 10th-13th) with Spokane reaching the century mark 3 consecutive days. Spokane reached 102 degrees F and Wenatchee 104 degrees F. Lewiston easily had the worst of it, reaching 103, 105, 107, and 110 degrees. Temperatures cooled 14 -18 degrees on the 14th as a cool front moved in from the Pacific, pushing the hot ridge east into Montana. The rest of the month remained hot and dry. Lewiston had a couple more triple-digit days on the 23rd and 24th. All of this hot and dry weather heightened wildfire concerns in the area as fine fuels were already cured. Additionally there were several dry lightning episodes resulting in wildfires.

If there was any fear that the hot weather in July would continue through the summer, that was quickly put to rest in early August. A trough slowly moved over the area resulting in cool but dry weather. Temperatures were about 15 degrees below normal during the first week in August, with Spokane reaching only 68 degrees F on the 6th. During the 2nd week of August temperatures warmed up into the lower 90s, but the wind flow was out of the north, an unusual wind direction during the middle of summer. This brought in extremely dry air with afternoon relative humidities in the single digits. For the rest of the month temperatures were very close to normal. Thunderstorm activity picked up considerably over extreme eastern Washington as well as the Idaho Panhandle. Spokane measured 1.06" from a thunderstorm on the 22nd. This was the 4th wettest August day ever in Spokane. A week later Lewiston received 0.84". The Basin and Cascades remained very dry with many locations receiving less than 0.10" during August.

Fall 2002

All 3 months saw precipitation well below average. Weather in September could be classified as pretty average, albeit a bit drier than normal. Temperatures bounced around, as is typical for the month. After some light rain in the first few days of October, a dry Canadian air mass moved into the area on the 11th. The low temperature at Spokane on the 12th was only 19 degrees, which was the coldest it had ever been so early in the Fall. Temperatures rebounded under cloudless skies during the middle of the month. On the 28th a very strong cold front moved down from Canada. This front brought rain to the Inland Northwest, with more than 4" of snow at Winchester, ID. The front also brought very cold air behind it. On the morning of the 30th numerous daily low temperature records were broken. Low temperatures on the 31st were very noteworthy, as Wenatchee and Lewiston dropped to 15, while Spokane plummeted to 7. At all 3 locations, these were not just the coldest temperatures so early in the Fall, but were also the record low temperatures for the entire month of October. Outlying locations such as Priest Lake and Turnbull National Wildlife Refuge (south of Cheney) actually dropped below zero degrees F on that morning.

The cold weather continued into the first week of November as a large ridge of high pressure was firmly locked in over the western U.S. But eventually the Pacific jet stream was able to break down the ridge and the storm door was open. From the 7th through the 21st the Inland Northwest received several rain storms. Temperatures were very mild with daytime highs in the 40s and 50s and lows remaining above freezing. As the month drew to a close, high pressure once again became the dominant weather feature over the area.

2002 Fire Season Fire Activity Summary

The total number of fires in eastern Washington and north Idaho in 2002 was slightly above the long term average and the number of lightning caused fires was also slightly above the long term average. While the total acres burned was above the long term average, sixty-one percent of the total acres burned this year was from one fire. The human caused Deer Point fire consumed 43,000 acres in the Wenatchee National Forest on the north shores of Lake Chelan and was by far the largest fire experienced this year.

Below is a list of all fires over 100 acres listed in chronological order.

- | | |
|-----------------------|--|
| July 12 - | Ridge Fire, 104 acres, fireworks, NE DNR |
| July 15 - | Deer Point, 43,000 acres, campfire, Wenatchee NF |
| July 19 - | Tunnel, 187 acres, unknown cause, SE DNR |
| July 24 - | Pickens, 2298 acres, burn barrel, NE DNR |
| August 10 - | Paradise, 140 acres, tractor, NE DNR |
| August 13 - | Ewe Neck, 100 acres, lightning, SE DNR |
| August 14 - | Oak Creek #2, 2286 acres, recreation, SE DNR
Clay Grade, 113 acres, equipment, Colville Indian Agency |
| August 15 - | Deer Mountain, 2,281 acres, human caused, SE DNR |
| August 16 - | Haley Creek, 200 acres, powerline, Colville Indian Agency
Curlew, 183 acres, powerline, NE DNR
Lemanasky, 116 acres, powerline, NE DNR |
| August 17 - | Middle Mountain, 7858 acres, lightning, Okanogan NF
Quartz Creek, 4286 acres, lightning, Okanogan NF
Spring Creek, 1873 acres, tractor, NE DNR
Hope 44, 312 acres, vehicle, Idaho Panhandle |
| August 24 - | Sourdough, 114 acres, lightning, NE DNR |
| August 31 - | Cowiche Mill Road, 120 acres, unknown cause, SE DNR |
| September 12 - | Lotus Point, 122 acres, equipment, Idaho Panhandle |
| September 18 - | Fish Hatchery, 300 acres, debris, Idaho Panhandle |

Fire Data of User Agencies - 2002

Agency	Number of Lightning Caused Fires	Number of Acres Burned by Lightning Caused Fires	Total Fires	Total Acres Burned
SE DNR	20	142	146	5,099
NE DNR	121	247	391	5,976
Colville IA	47	97	124	558
Okanogan NF	56	12,187	74	12,190
Wenatchee NF	38	108	106	45,951
Colville NF	61	55	72	75
Idaho Panhandle	122	36	244	965
Total	465	12,872	1,157	70,814

Fire Data by Year: 1970-2002

Year	Total Fires	Lightning Caused Fires	Total Acres Burned
1970	1,303	488	215,037
1971	606	127	3,902
1972	747	253	2,111
1973	1,079	123	11,223
1974*	1,103	238	9,466
1975	953	337	4,807
1976	740	117	32,272
1977	983	591	16,342
1978	790	339	2,361
1979	1,263	446	17,090

1980	613	243	3,465
1981	930	482	16,894
1982	910	368	5,776
1983	595	176	2,453
1984	879	406	5,757
1985	1,112	355	71,488
1986	865	295	9,727
1987	1,057	348	18,214
1988	689	84	89,140
1989	1,088	399	14,259
1990	1,203	583	15,324
1991	1,080	430	47,928
1992	959	368	33,819
1993**	655	186	3,295
1994	1,433	648	260,245
1995	792	211	4,002
1996	739	205	35,375
1997	467	247	5,283
1998	969	439	50,943
1999	951	283	13,128
2000***	827	435	259,024
2001	953	507	182,468
2002	1,157	465	70,814
* Colville NF not included in years prior to 1974 ** Spokane IA not included in years prior to 1993 *** Added Northern Idaho Panhandle District in 2000			

2002 WFO SPOKANE FIRE WEATHER WATCH/WARNING VERIFICATION RESULTS

Date	Watch	War- ning	Zones	Reason/Event	Verification/ Action
June 26		X	673,676,677,684, 685,687	Dry Lightning	Yes -687 No -673,676,677, 684,685
July 3		X	676,677,684	Low RH/Wind	Yes -684 No -676,677
July 6	X		684,685,687	Dry Lightning	Upgraded 7/7
July 7		X	684,685,687	Dry Lightning	No .
July 11		X	All Zones.	Low RH/ High Haines	Yes .
July 12	X		673,676,677,680, 682,684,685,687	Dry Lightning	Upgraded 7/13
July 13		X	686,101	Low RH/High Haines/Dry Lightning	Yes .
July 13		X	673,676,677,680, 682,684,685,687	Dry Lightning	Yes -673,682,684, 685,687 No -676,677,680
July 22	X		All Zones.	Dry Lightning	Upgraded- 676, 677,680,682,685, 101 on 7/23 Canceled- 673, 684,686,687 on 7/23
July 23		X	676,677,680,682, 685,101	Dry Lightning	Yes -680,682,685, 101 No -676,677 MISSED -686,687
July 27			684	Low RH/Wind	Miss
July 30			684	Low RH/Wind	Miss
Aug 14		X	673,677,684,686, 687,101	Low RH/Wind	Yes -673,677,684, 686,101 No -687 MISSED -676

Aug 15		X	All Zones	Low RH/Wind	Yes -673,684,686,687 (RH not low enough but severe wind gusts w/ numerous fire starts) No -676,677,680,682,685,101
Aug 17			673,684,686	Low RH/Wind	MISSSES
Sep 14	X		686,101	Low RH/Wind	Upgraded on 9/15
Sep 15		X	686,101	Low RH/Wind	NO MISS -684

VERIFICATION BREAKDOWN BY FIRE WEATHER DISTRICT

POD = Probability of Detection
(1 is best, 0 is worst)

FAR = False Alarm Rate
(0 is best, 1 is worst)

CSI = Critical Success Index
A combination of POD and FAR
(1 is best, 0 is worst)

LT = Average Warning Lead Time in hours

All Warnings

Zones	673	676	677	680	682	684	685	686	687	101	All Zones
Warnings	5	6	7	4	4	7	6	5	6	6	56
Verified	4	1	2	2	3	5	3	4	4	4	32
Unverified	1	5	5	2	1	2	3	1	2	2	24
Misses	1	1	0	0	0	4	0	2	1	0	9
POD	.80	.50	1.0	1.0	1.0	.56	1.0	.67	.80	1.0	.78
FAR	.20	.83	.71	.50	.25	.29	.50	.20	.33	.33	.43
CSI	.67	.14	.29	.50	.75	.45	.50	.57	.57	.67	.49
LT	13	11	21	15	10	8	12	12	12	20	12

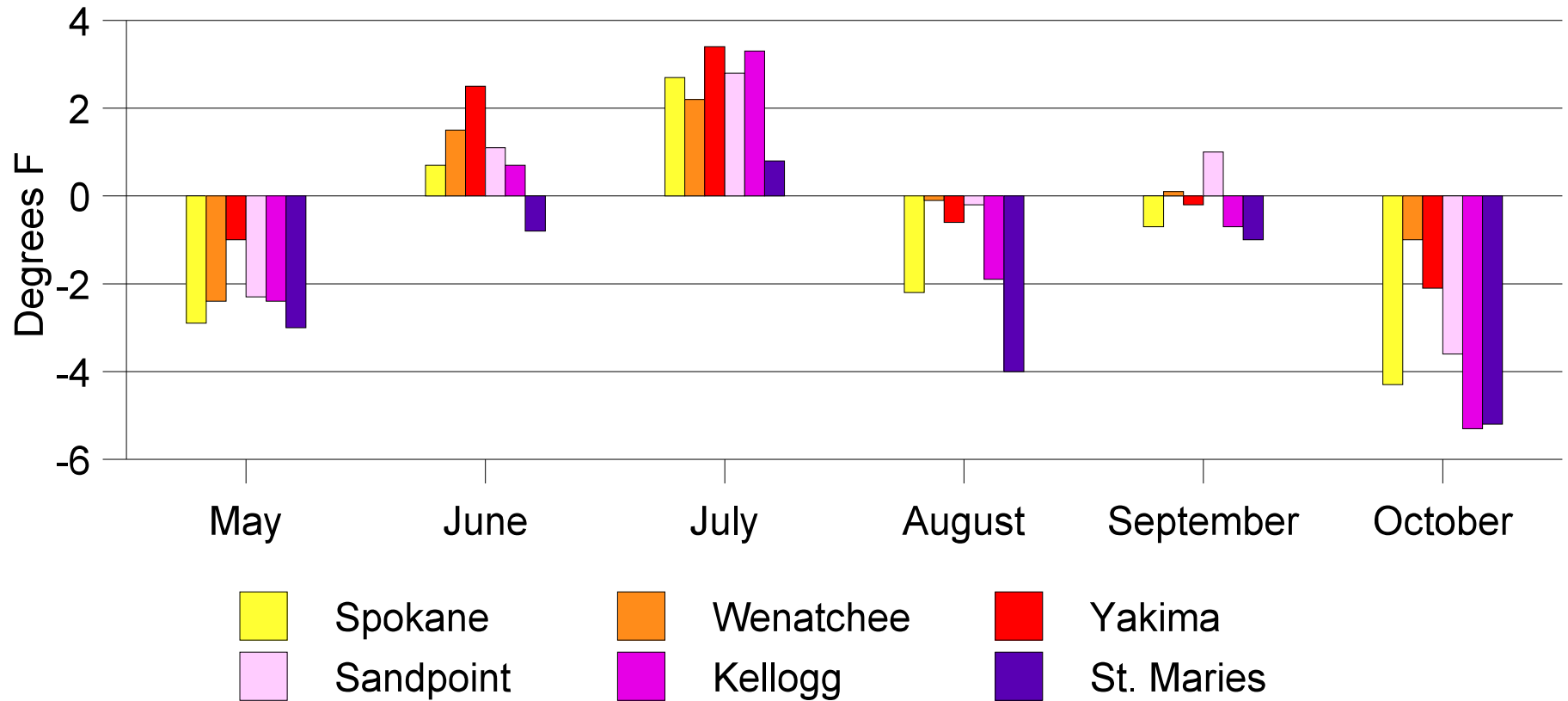
Warnings for Dry Lightning

Zones	673	676	677	680	682	684	685	686	687	101	All Zones
Warnings	2	3	3	2	2	3	4	0	3	1	23
Verified	1	0	0	1	2	1	2		2	1	10
Unverified	1	3	3	1	0	2	2		1	0	13
Misses	0	0	0	0	0	0	0	1	1	0	2
POD	1.0			1.0	1.0	1.0	1.0	0	.67	1.0	.83
FAR	.50	1	1	.50	0	.67	.50		.33	0	.57
CSI	.50	0	0	.50	1.0	.33	.50	0	.50	1.0	.40
LT	4			8	4	7	8	3	6	14	6

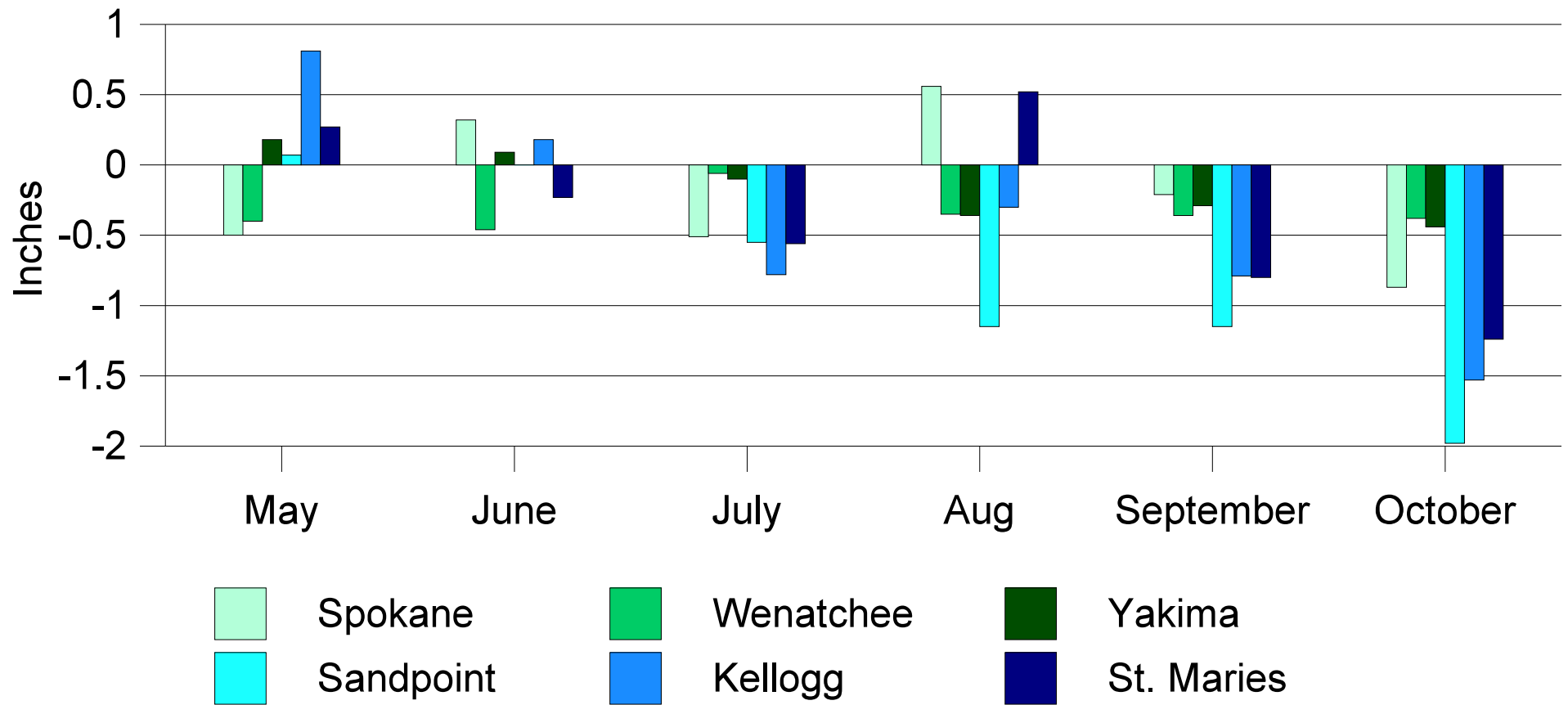
Warnings for Low RH combined with Wind or Haines

Zones	673	676	677	680	682	684	685	686	687	101	All Zones
Warnings	3	3	4	2	2	4	2	5	3	5	33
Verified	3	1	2	1	1	4	1	4	2	3	22
Unverified	0	2	2	1	1	0	1	1	1	2	11
Misses	1	1	0	0	0	4	0	1	0	0	7
POD	.75	.50	1.0	1.0	1.0	.50	1.0	.80	1.0	1.0	.76
FAR	0	.67	.50	.50	.50	0	.50	.20	.33	.40	.33
CSI	.75	.25	.50	.50	.50	.50	.50	.75	.67	.60	.55
LT	15	11	21	22	22	8	22	15	17	22	15

Temperatures - Departure from Normal



Precipitation - Departure from Normal



OPERATIONAL SUMMARY OF THE 2002 FIRE SEASON

Fire weather support for the 2002 Fire Season began during the first week in March with site specific requested spot forecasts for prescribed burns. We saw an average winter snow pack in the mountains, but valley areas had well below normal precipitation from November 2001 through March 2002. The below normal precipitation continued through most of the 2002 fire season. Due in part to the mountain snow pack and lower valley lack of precipitation, we again witnessed an early start for site specific forecasts for prescribed fire. Land Management Forecasts were issued once a day five days a week through the winter and early spring months. Fire Weather Forecast services began with limited forecast support (forecasts issued twice daily, five days a week) starting April 12th. Full service (forecasts issued twice daily seven days a week) began on the week of June 17th. Full service forecast support continued until October 19th when operational service changed back to limited support that lasted until November 4th. Land Management Forecasts support commenced on November 5th. Land Management Forecasts again were issued once a day at 9:00 in the morning as a planning guide for land management agencies through the winter months.

From an operational standpoint, the 2002 fire season was another very busy one. Spokane IMET's were dispatched to a total of twelve fires during the 2002 fire season. Spokane forecaster, Rocco Pelatti, joined the IMET staff at WFO Spokane during the 2002 fire season. Rocco had gone through extensive office training accompanied by two training fires to qualify as an IMET. Rocco's training fire's were the Biscuit Fire in Gold Beach, Or and the Ewe Neck Fire on DNR protected land west of Yakima, Wa in mid September. Rocco returned to the Biscuit Fire later in September for his first solo IMET dispatch. IMET Todd Carter was dispatched a total of five times. Todd went to the Big Wash Fire near Cedar City UT June 8th then transferred to the Sanford Fire near Panquitch, UT June 18th and remained there till June 21st. Todd also was dispatched to the Mahogany Mountain Fire near Jordan Valley, UT on July 16th to the 21st, the Deer Point Fire near Chelan, Wa on July 29th through August 6th then finally to the Apple Fire in Glide, Or on August 20th - 30th. Gary Bennett was dispatched four times during the 2002 fire season, to the Hayman Fire near Colorado Springs, Co June 20th to the 23rd, the Tiller Complex Fires near Tiller, Or July 15th to the 27th, The Apple Fire near Glide, Or August 28th through September 8th and finally to the Ewe Neck Fire west of Yakima September 14th through September 16th. The Ewe Neck Fire served as Rocco Pelatti's final training fire.

This season, WFO Spokane Fire Weather Program issued a total of 603 spot forecasts for management planned activities and wild fires. This spot forecast total establishes a new record total for the WFO Spokane Fire Weather Program. The old record was 407 set last year. The Internet spot forecast request system continues to offer land management agencies rapid turn-around for their spot requests. The rapid response time has allowed for more spot forecasts to be processed.